

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH

2022, Vol. 3, No. 8, 1526 – 1547

<http://dx.doi.org/10.11594/ijmaber.03.08.15>

Research Article

Sustaining Pre-Service Teachers' Virtual Engagement in a Health Education Course through Interactive Buzz Sessions

Stephanie G. Dizon, Paula Mae Q. Fernandez, Jewel Marie M. Serrano, Harold Raven S. Dalangin, Kervy S. Mungcal, Julius Ceazar G. Tolentino*, Luwy R. Valenzuela

College of Education Don Honorio Ventura State University Bacolor 2001, Pampanga, Philippines

Article history:

Submission August 2022

Revised August 2022

Accepted August 2022

*Corresponding author:

E-mail:

jcgtolentino@dhvsu.edu.ph

ABSTRACT

Distance learning manifested an increasing growth in the field of higher education. Although it may not be exactly comparable to a residential face-to-face encounter, considering the engagement of the students in learning within a virtual context is still significant. Thus, this action research was conducted to sustain the level of virtual engagement among undergraduate teacher education students specializing in Physical Education when interactive buzz breaks are introduced in their online synchronous sessions. This study utilized a mixed-method collaborative action research approach. The participants included 48 second-year Bachelor of Physical Education (BPEd) students enrolled in the course, "Drug Education, Consumer Health, and Nutrition", from a teacher education institution (TEI) in Central Luzon, Philippines during the second semester of the academic year 2021-2022. Multiple sources of data were collected and analyzed which included teacher's observation notes, Student Engagement Survey Questionnaire, and reflective journals. Five (5) interactive buzz break activities were implemented using the "Wordwall" as an intervention within twelve synchronous sessions. The survey questionnaire was administered before (pre-assessment) and after (post-assessment) the intervention to describe the students' level of virtual engagement. Results of the quantitative phase revealed that there is a high level of students' behavioral, cognitive, and emotional virtual engagement before and after the strategy. The qualitative phase further promoted these results to reveal the remarkable experiences encountered by students during the intervention implementation that contributed to sustaining their virtual engagement. The derived results and findings posit that administering various interactive buzz break activities with the utilization of various educational platforms

How to cite:

Dizon, S. G., Fernandez, P. M. Q., Serrano, J. M. M., Dalangin, H. R. S., Mungcal, K. S., Tolentino, J. C. G., & Valenzuela, L. R. (2022). Sustaining Pre-Service Teachers' Virtual Engagement in a Health Education Course through Interactive Buzz Sessions. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(8), 1526 – 1547. doi: 10.11594/ijmaber.03.08.15

synchronously and asynchronously may sustain and further improve students' virtual engagement.

Keywords: health education, interactive buzz break activities, pre-service teachers, sustain virtual engagement, Wordwall

Background

Distance learning manifested an increasing growth in the field of higher education. The utilization of various digital and communication technologies allowed the method of distance online learning to compete with the traditional face-to-face setting of various educational institutions (Zaborova et al., 2017). With the aid of the internet, students and teachers may have the opportunity to acquire knowledge and interact with each other through listening to synchronous and asynchronous sessions (Armstrong-Mensah et al., 2020). Although online distance education learning may not be exactly comparable with a residential face-to-face encounter, considering the engagement of the students in learning within a virtual context is still significant. This would minimize the chances of having a learner feel isolated, allow learners to be engaged and diminish rates of attrition, improve the quality of their outcomes, and prospectively lower the chances of committing academic dishonesty in class.

Health Education in the Philippines

The K to 12 Physical Education curriculum has been integrating health education to its content standards since the implementation kicked off last 2016. Establishing a physical activity routine to attain and sustain a health-enhancing level of fitness was included in the standards that were set by the Department of Education (DepEd). Moreover, since physical literacy is the foundation of lifelong participation in physical activities which is essential for preserving and promoting health, the health courses in the Senior High School (SHS) were seamlessly structured in the Physical Education curriculum. Hence, the Health-optimizing Physical Education or H.O.P. E (Department of Education [DepEd], 2016). Moreover, as stated in the Commission on Higher Education (CHED) Memorandum No. 80, series of 2017 which indicated the Policies, Standards, and

Guidelines for Bachelor of Physical Education (BPEd), Physical Education is a discipline and teaching profession that promotes social interaction, analysis of one's well-being, sports participation, doing physical activities, cultural practices, and health practices. The inclusion of health education in the program is evident in the course offerings which include Coordinated School Health Program; Personal, Community, and Environmental Health; Emergency Preparedness and Safety Management; and Drug Education, Consumer Health Education, and Healthy Eating.

Factors Affecting Students' Engagement

Student engagement has been a growing concern among teachers as most institutions transitioned from face-to-face settings to online instruction (Baloran & Hernan, 2021). Student engagement is reported to be attributed to academic performance as it reinforces the accomplishments of the students in learning, specifically in the online learning environment (Khlaif, 2021). This supported the claim of Banna et al. (2015) that engaged learning is one of the most significant portions of today's learning environment to assist knowledge construction with the utilization of technology (Banna et al., 2015).

In line with this, factors that affect the students' engagement in virtual platforms were explored in several studies (Elshami et al., 2022; Xu et al., 2022; Sökmen, 2021; Raes et al., 2020). For instance, Elshami et al. (2022) reported that the technological pedagogical skills of a teacher must be considered. Similar to this, the teachers' facilitation contributed to the factors affecting the students' engagement as Xu et al. (2022), mentioned. Specifically, the behavioral and cognitive engagement is reported to be higher in the class that underwent teachers' facilitation compared to the class who were not (Xu et al., 2022). Moreover, the feedback that the teacher is providing to the students was

considered a positive predictor in all aspects of student engagement (Sökmen, 2021). Aside from this, Khlaif et al. (2021) mentioned that infrastructure factors, cultural factors, digital inequality, and the threat to digital privacy have an impact on student engagement in an online setting. Further, digital inequality and the threat to digital privacy were reported to negatively affect student engagement (Khlaif, 2021). Learning styles were also found to affect the aspects of student engagement which include behavioral, cognitive, and emotional engagement (Halif et al., 2020). Visual learners were claimed to be more engaged in learning compared to auditory and kinesthetic learners (Halif et al., 2020). On the other hand, the students' relationships with their peers and intrinsic motivation were the lowest in a hybrid setting of learning which may affect the engagement of the students in learning (Raes et al., 2020).

The relationship between teachers and students was also found to affect student engagement (Baloran & Hernan, 2021; Delfino, 2019). Baloran and Hernan (2021) further stated that the lack of contact between students and teachers may be one of the reasons why the engagement of the students is not satisfactory. Moreover, the fear of committing mistakes and being criticized by the students are also part of the hindrances that prevent the promotion of student engagement as reported by Delfino (2019).

Techniques to Improve Students' Engagement

To increase the engagement of the students in learning, various techniques were developed and proposed (Cole et al., 2021; Raju et al., 2021; Yu et al., 2021; Kirby et al., 2020). Students appreciate the essence of completing a task that requires them to imply these tasks or skills in the real world (Cole et al., 2021). Doing promotional and relevant outputs would help students reflect and understand the concept of a topic. Hence, the technique being utilized is the promotion of activities that may be helpful in the real-world setting. Online tasks are hard to do but it will help students to comply easier if the tasks are in groups so that they can collaborate and talk to each other (Cole et al.,

2021). With that, collaborative effort helps students to engage in activities within the online set-up. In the online set-up, there are new sets of approaches to give effective and quality instructions wherein teachers must be more innovative to ensure quality and engaging classes (Raju et al., 2021). It was suggested that the utilization of game-based approaches helps students to be more engaged and to be competitive which would result in better academic performance. Another technique proposed by Yu et al., (2021) was adaptive and situational games for the reason that they improve more on problem-solving, critical thinking, behaviors, and attitudes of the students. It is suggested that educators must include game-based instructions to improve students' engagement. In addition to that, integration of learning context through gamification and various learning activities highly promotes students' motivation. The long duration of class discussions reduces the motivation of the students to participate actively in the class. Kirby et al. (2020) stressed that carefully selected activities or brain breaks that are provided for the students decrease distress and improve students' well-being through altering their tough experiences during class hours. Since we are now in an online learning environment, we are now utilizing the use of online platforms. Raju et al. (2021) claimed that the use of google classroom is effective in giving students materials and assignments.

Utilization of Online Platforms to Improve Students' Engagement

In this study, the researchers sought to improve the virtual engagement of students in an online health education course. In doing so, activities were utilized and administered through Interactive Buzz Sessions (IBS). The conventional description of Buzz sessions is a discussion of ideas from a group of students (Larasanti & Marlina, 2019). As opposed to this definition, IBS, in this study, was composed of various formative assessments that helped teachers monitor and check students' learning progress. Implementing these activities helped the students in improving their engagement in learning. In implementing these activities, online platforms may be used. For instance,

Wordwall is an online platform where a teacher can make their learning resources based on the templates of the mini-activities set on the website. This platform enabled the teachers to create interactive and differentiated activities by placing the contents on the desired template. As of writing, *Wordwall* has already 33 templates available for activities. Millions of resources have already been created on the platform and it supports 41 languages including English. This platform was tested for its usability and revealed that the “online teaching tool is user-friendly since the respondents had no difficulty navigating the site even without the help of a technical expert” (Bueno et al., 2022). Moreover, *Wordwall* was already utilized to improve the vocabulary knowledge of 5th-grade students and showed that it effectively

enhances the students' vocabulary (Çil, 2021). In this study, *Wordwall* was used to sustain the virtual engagement of the students.

Methods

The study utilized a mixed-method collaborative action research approach and sequential explanatory design. The use of the Plan-Do-Study-Act (PDSA) process, conceptualized by Deming in 1993, was also adopted in this action research. The participants included 48 second-year Bachelor of Physical Education (BPEd) students enrolled in the course, “Drug Education, Consumer Health, and Nutrition”, from a teacher education institution (TEI) in Central Luzon, Philippines during the second semester of the academic year 2021-2022.

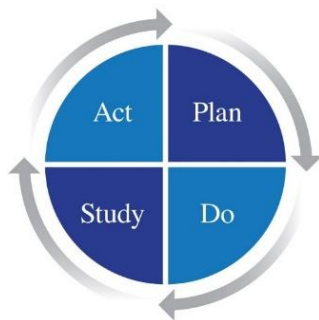


Figure 1. The PDSA Cycle (Deming, 1993)

Intervention

The Interactive Buzz Sessions (IBS) was a conceptualized strategy proposed by the teacher-researchers as an intervention program that may aid in sustaining the virtual engagement of the students. The nomenclature of the strategy, in its essence, has fundamental and philosophical meanings. The term “interactive” denotes the way how two or more people connect and influence each other through communication (such as in the case of students to teachers, or their fellow students). In the height of the pandemic where online learning became the major instructional modality, providing various collaborative and interactive learning opportunities is crucial to delivering a rich learning experience to students (Rugube et al., 2020). Meanwhile, the term “buzz” may refer to a noun that manifests an ambiance (either in

residential face-to-face or in a virtual ecosystem) characterized by enthusiasm and enjoyable activities. A conducive learning environment enables the students to participate and interact in the teaching and learning process (Khan, 2017). Ultimately, the term “sessions” indicates that the educational activities may constitute a variety of activities done online (synchronously) that were sequentially planned in conformity with the content and learning outcomes of the health education course. This may further be proven in the study conducted by Christopoulos et al. (2018) that there is a great impact on the learning process and engagement of students when employing the use of interactive activities as a form of assessment using a virtual setup to aid the students with ample information and understanding about certain concepts.

Before the start of the semester, students were surveyed on the availability of their gadgets or devices, their internet connectivity, and familiarity with specific internet-based platforms. The students were reoriented on the use of Google Classroom and the video teleconferencing platform (Zoom) to ensure ease of use and navigation during the orientation week. A Facebook Messenger group chat was also instituted for purposes of discussion, instant announcements, and consultations.

The implementation of the intervention lasted for five (5) synchronous sessions (each lasting 90 minutes). Before the implementation, the researchers allotted six sessions for the observations and administration of survey questionnaires needed for the quantifiable data. Two main topics of the course were covered in the intervention which included Drug Education and Consumer Health. All activities applied in the sessions were related to the topics covered. Moreover, the participants were exposed to various synchronous activities in buzz sessions that served as a formative assessment during discussions. Each buzz session activity was implemented in the synchronous meetings using the online platform called "Wordwall". The activities were the following:

BUZZing! (Activity 1). This activity marked the start of the buzz break implementation which focused on the topic "The Dangers of Cigarette Smoking". In implementing this activity, the class was divided into two groups playing against each other with the use of a Buzz Wall with fifteen boxes of numbers containing a corresponding task or question that ought to be accomplished by the randomly selected participant. Each group had a chance to pass, which means, they can pass the task or the activity to the opposition team only once.

BUZZle! (Activity 2). For the second synchronous session, the class worked in a group and was divided into four groups. An image was slowly revealed in a grid-formed like a puzzle that was slowly completed. As soon as a participant knows the answer and can identify the image, he/she can immediately buzz in by typing the code "Buzz + (the number of their group)". Both groups can have the opportunity to "oppose" the answer of the other team or

"propose" a better answer. This buzz break activity focused on the content of the topic "The Dangers of Drinking Alcohol".

The BUZZ! (Activity 3). In the third activity, the class participated individually. A random spin wheel was used that contained "Why and How" questions which aimed to accelerate students' critical thinking skills. This activity stimulated the reasoning and questioning skills of the students that eventually established the sharing of their own opinions and knowledge about the discussed concepts. The content of this buzz break activity focused on the topic "Drug Scenario in the Philippines".

BUZZ Wheel (Activity 4). Grounded on the content of "Quackery and Traditional Medicine", the fourth buzz break activity was administered. The class participated individually in this activity. A random wheel was used, and the participants read, analyzed, and answered whether "Buzz In" or "Buzz Out". After betting on the answer, they gave their impression or explanation as to why they chose the selected answer.

InBUZZtigation (Activity 5). Considering the content from "Quackery and Traditional Medicine", this activity utilized a spin wheel that contained a selection of phrases or sentences that manifested a real-life situation or instance where the randomly selected participant had a "tell-all" session about whichever sentence or phrase landed on his/her round. From here, the class was able to learn and acquire real-life lessons from real-life scenarios that they are experiencing in actual or might experience in the future.

In assessing the experience of the participants in the intervention, a reflective journal was submitted through the course's Google Classroom. The outputs were checked through the supervision of the researchers.

Three instruments were utilized in collecting the data namely, teachers' observation notes, students' engagement survey questionnaire, and reflective journals. In collecting the data, the students answered a survey via Google Forms regarding the Student Engagement Survey Questionnaire which was administered to the students before the implementation of the intervention that served as the pre-

test. The survey questionnaire was administered again after the implementation as part of the post-test. To assess the experiences of the participants, the students were tasked to submit a reflective journal through Google Classroom.

Before the data analysis, all quantitative data was extracted from Google Forms and transferred to Microsoft Excel. Mean and standard deviation, as part of the descriptive statistics, were used in analyzing the responses of the respondents in the survey questionnaires. The qualitative data obtained from the participants through reflective journals were analyzed through the utilization of the MAXQDA, a software intended for classifying text segments and creating themes from the transcripts. Further, a thematic analysis was applied to analyze the data. The thematic analysis by Braun and Clarke (2006) followed six steps in the process, mainly: (1) familiarization; (2) coding the data; (3) generating initial themes; (4) reviewing the themes; (5) naming and defining the themes; and (6) writing up the report.

Considering the mixed methods design of this study, the convergence of the quantitative and qualitative data was done to present the comparison of the results and their integration with the findings of the qualitative data.

Results and Discussion

Students' Level of Virtual Engagement Before the Intervention

Table 1 presents the assessment of students' behavioral engagement before the conduct of the intervention. It can be seen that most of the indicators denote a "High" verbal

description. The indicator with the highest mean of 3.50 and 0.65 standard deviation is the benchmark statement number five (5) with the statement "Coming to class every day". This means that all the respondents were attending their class every session of their Health Education course which is indicative of their willingness and commitment to learning. This is supported by Appleton et al. (2006) and Fredricks et al. (2011), as cited in Monteiro et al. (2021) who claimed that behavioral engagement is associated with attendance. On the other hand, only one indicator obtained the lowest mean of 2.02 and a standard deviation of 0.73 with a benchmark statement, "Comes to class without completing readings or assignments". This shows that there were only a small number of students entering the virtual class with unaccomplished tasks and without reading their previous lessons. Some students were not prepared before entering the class. According to Khanova et al. (2015), students are coming into the class without reading or viewing their modules. Overall students' unwillingness to learn by reading has also been a contributing factor to poor pre-class learning. This was validated by the lack of a mechanism in the course to support students responsible for class preparation.

Generally, the student's level of behavioral engagement before the intervention acquired a grand mean of 2.92 (*SD* = 0.66) with a verbal description of "High". According to Nguyen et al. (2016), the results of their study concluded that students are more active and engaged than disengaged when they are with their peers and teachers, either solo or in a group setting.

Table 1. Descriptive Analysis of Respondents' Level of Virtual Engagement (Behavioral) Before their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Asked questions in class or contributed to class discussion	2.94	0.67	High
2. Raising my hand in class	2.98	0.81	High
3. Participating in or small group discussions	3.10	0.63	High
4. Doing all the homework problems	3.13	0.64	High
5. Coming to class every day	3.50	0.65	High
6. Taking good notes in class	3.08	0.77	High
7. Getting a good grade	2.92	0.54	High
8. Staying up on the readings	2.81	0.64	High

Indicators	M	SD	Verbal Description
9. Received prompt written or oral feedback from faculty on your academic performance	2.67	0.75	High
10. Come to class without completing readings or assignments	2.02	0.73	Low
11. Making sure to study on a regular basis	2.98	0.48	High
12. Doing well on a test	2.94	0.63	High
Grand Mean	2.92	0.66	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Presented in Table 2 is the level of cognitive engagement of the students before the conduct of the intervention. The indicator “Applying course materials to my life” recorded the highest mean score of 3.25 (*SD* = 0.53). Given that the questions in the IBS are more situational, the learners find the intervention very relatable to their real-life which became a driving factor for them to consider learnings from IBS sessions to be applied in real life. Also, since the learners are pre-service teachers, they perceive the intervention as a great opportunity to learn about the things, strategies, and practices that they may apply in their future careers as teachers. Moreover, the indicator “Going to the professor’s virtual office during hours to review assignments or tests, or to ask questions” bagged the lowest mean score of 2.19 (*SD* = 0.70). This

may indicate that the learners may have fully understood the concepts discussed for it was concisely discussed during class hour sessions which is the reason why they don’t feel the need to go to the office and seek help for some queries.

It can also be surmised that the grand mean for the level of cognitive engagement of the students garnered a mean score of 2.78 with a verbal description of “High”. This may imply that the Interactive Buzz Sessions helped in improving the cognitive engagement of the learners in the virtual class setup. It can be supported in the study conducted by Huang et al. (2019) where it was revealed that the implementation of such interesting and interactive activities helps magnanimously in promoting the cognitive engagement and activeness of the learners.

Table 2. Descriptive Analysis of Respondents' Level of Virtual Engagement (Cognitive) Before their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Made a class presentation	2.73	0.68	High
2. Prepared two or more drafts of a paper or assignment before turning it in	2.77	0.59	High
3. Worked on a paper or project that required integrating ideas or information from previous sources	2.90	0.56	High
4. Put together ideas or concepts from different courses when completing assignments or during class discussion	2.81	0.57	High
5. Used an electronic medium to discuss or complete an assignment	2.94	0.56	High
6. Discussed ideas from readings or classes with faculty members outside of class	2.29	0.68	Low
7. Putting forth effort	2.98	0.64	High
8. Used e-mail to communicate with an instructor	2.33	0.69	Low
9. Discussed grades or assignments with an instructor	2.52	0.80	High
10. Work harder than you thought you could do to meet an instructor’s standards or expectations	3.00	0.65	High

Indicators	M	SD	Verbal Description
11. Discussed ideas from your readings or classes with others outside of class	2.60	0.71	High
12. Going to the professor's virtual office during hours to review assignments or tests, or to ask questions	2.19	0.70	Low
13. Thinking about the course between class meetings	2.73	0.57	High
14. Finding ways to make the course interesting to me	3.08	0.54	High
15. Looking over class notes between classes to make sure I understand the materials	2.88	0.67	High
16. Applying course materials to my life	3.25	0.53	High
17. Finding ways to make the course relevant to my life	3.19	0.49	High
Grand Mean	2.78	0.63	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Table 3 reveals the level of emotional engagement of the students before the implementation of the intervention strategy. Respondents described the statement "Having fun in class" as "High" with the highest mean score of 3.33 (*SD* = 0.60). This is an indication that students already enjoy the course. On the other hand, a total of four indicators tallied a "Low" verbal description. Indicator number 4 "Tutored or taught other students paid or voluntary" had the lowest mean gathered from the respondents (\bar{x} = 2.15; *SD* = 0.77). It can be seen in the results before the intervention that the respondents are not engaged in tutoring or teaching other students whether paid or not. This can be interpreted as the respondents' desire that the students will understand and learn better by themselves (Lawson et al., 2018). It was then followed by indicators number five (5), ten (10), and eleven (11) in no particular order. Having four (4) indicators with "Low" verbal descriptions can be considered a problem since students are now learning through

online classes. Özhan and Kocadere (2019) stated that emotional engagement must be considered to have successful learning. In addition to that, utilizing games and player types models can increase students' motivation which leads to increased emotional engagement (Özhan & Kocadere, 2019).

Overall, the students' analysis of their level of emotional engagement recorded a grand mean score of 2.64 (*SD* = 0.69) which can be described as "High." With that, it can be gleaned that the emotional engagement of the students was already high before the implementation of the IBS strategy. This means that they showed the value of learning and the enjoyment they experienced in the class even before the implementation of the IBS strategy (Redmond et al., 2018). That can be a result of their interest to learn in the course because as future physical educators, they must also be knowledgeable in health education (Cale et al., 2020). This also shows the positive attitude of the students towards learning (Hewson, 2018).

Table 3. Descriptive Analysis of Respondents' Level of Virtual Engagement (Emotional) Before their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Included diverse perspectives in class discussions or writing assignments	2.92	0.50	High
2. Worked with other students on projects during class	2.56	0.85	High
3. Worked with classmates to prepare class assignments	2.81	0.87	High
4. Tutored or taught other students paid or voluntary	2.15	0.77	Low

Indicators	M	SD	Verbal Description
5. Participated in a community-based project as part of a regular course	2.42	0.74	Low
6. Had serious conversations with students who are very different from you in terms of their religious, political opinions, or personal values	2.71	0.62	High
7. Really desiring to learn the materials	3.17	0.52	High
8. Being confident that I can learn and do well in the class	2.92	0.58	High
9. Having fun in class	3.33	0.60	High
10. Worked with faculty on activities other than coursework	2.25	0.76	Low
11. Talked about career plans with a faculty member or adviser	2.23	0.72	Low
Grand Mean	2.64	0.69	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Table 4 reveals the appraisal of students on the level of their behavioral engagement after the implementation of the intervention. With a mean score of 3.56 ($SD = 0.65$), the benchmark statement “Coming to class every day” was described by the respondents as “Very High”. This is a manifestation that the activities implemented through the IBS strategy motivated students to attend their Health Education course more frequently than before. The strategy provided students with various interactive activities which made the sessions more exciting leading students to await the next activity they are going to participate in. Some students enter the class before the course’s schedule. The results also revealed that there is a “Low” number of students who “Come to class without completing readings or assignments” with a mean score of 2.17 ($SD = 0.63$). Because the Buzz Break Activities were encapsulated with the theories and concepts presented in a particular subject matter, students were determined

to have their readings and review what has been taught. With that, they were able to successfully participate in the activities with their competence in knowledge and skills.

In general, the students’ analysis of their level of behavioral engagement as a result of the intervention was regarded as “High” ($\bar{x} = 2.9$; $SD = 0.67$). This confirms that the IBS strategy positively influenced students’ behaviors. The activities served as a platform for them to recognize their responsibilities in their learning. They were able to exhibit initiatives. Students learned what and how to act and react to their responsibilities as learners which sustained their behavioral engagement. This result is supported by Sherab (2013) as cited in Jamaludin and Osman (2014), stating that through the promotion of active learning such as Buzz Break Activities, students’ behavioral engagement can be enhanced.

Table 4. Descriptive Analysis of Respondents’ Level of Virtual Engagement (Behavioral) After their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Asked questions in class or contributed to class discussion	2.79	0.58	High
2. Raising my hand in class	3.08	0.85	High
3. Participating in or small group discussions	3.08	0.65	High
4. Doing all the homework problems	3.19	0.61	High
5. Coming to class every day	3.56	0.65	Very High

Indicators	M	SD	Verbal Description
6. Taking good notes in class	2.98	0.79	High
7. Getting a good grade	3.04	0.50	High
8. Staying up on the readings	2.77	0.63	High
9. Received prompt written or oral feedback from faculty on your academic performance	2.71	0.87	High
10. Come to class without completing readings or assignments	2.17	0.63	Low
11. Making sure to study on a regular basis	2.88	0.57	High
12. Doing well on a test	3.10	0.66	High
Grand Mean	2.95	0.67	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Table 5 reveals the level of cognitive engagement of the students after the implementation of the intervention strategy. Further, out of 17 indicators in the cognitive engagement, two items recorded a "Very High" verbal description, namely: "Applying course materials to my life" ($\bar{x} = 3.40$; $SD = 0.54$) and "Finding ways to make the course relevant to my life" ($\bar{x} = 3.35$; $SD = 0.67$). This indicates that the buzz break activities do not only affect the engagement of the students inside the virtual classroom but also develop skills in a real-life situation. This is because the content of the activities mainly was situational. On the other hand, three indicators documented a "Low" verbal description which include: "Discussed ideas from readings or classes with faculty members outside of class" ($\bar{x} = 2.46$; $SD = 0.82$), "Going to the professor's virtual office during hours to review assignments or tests, or to ask questions" ($\bar{x} = 2.15$; $SD = 0.82$), and "Discussed grades or assignments with an instructor" ($\bar{x} = 2.44$; $SD = 0.74$). These indicators recorded a low-level rating since the buzz break activities were mainly focused on improving the engagement of the students primarily in a virtual synchronous meeting. Snijders et al. (2020) stated that a relationship management approach among faculty members and students, particularly in higher education institutions, sustains academic achievements which include student engagement.

In comparing the results, three (3) indicators documented an increase in the level of cognitive engagement after the implementation of the IBS strategy. For instance, it is noteworthy that the indicator "Work harder than you

thought you could do to meet an instructor's standards or expectations" recorded a mean score of 3.13 ($SD = 0.37$) with a verbal description as "High" after the implementation of the IBS strategy from the mean score of 3.00 ($SD = 0.65$) with a verbal description of "Low" prior the implementation. These results indicated that the IBS strategy motivated the students to maximize their capabilities in terms of their knowledge and skills to achieve the standards or expectations that were set in the class. In addition, the indicator "Applying course materials to my life" also recorded an increase with a mean score of 3.40 ($SD = 0.54$) with a verbal description of "Very High" after the conduct of the intervention from the mean score of 3.25 ($SD = 0.53$) with a verbal description of "High" before the conduct of the intervention. Also, an increase in the indicator "Finding ways to make the course relevant to my life" was seen as it recorded a mean score of 3.35 ($SD = 0.64$) with a verbal description of "Very High" from its mean score of 3.19 ($SD = 0.49$) before the implementation of the IBS strategy. These results demonstrate that the implementation of the IBS strategy aids the students concerning real-life situations that they may encounter. The knowledge and skills they also developed in participating in the IBS strategy may be utilized in their day-to-day living.

In general, a "High" level of cognitive engagement was demonstrated by the students in the Health Education course ($\bar{x} = 2.87$; $SD = 0.68$). The positive effect of the implementation of the IBS strategy was manifested in the results of their cognitive virtual engagement. The students became aware of how to apply the

lessons obtained from the course to their lives. The results supported the claim of Samson (2015) who mentioned that the development of problem-solving and critical thinking skills of the students will be promoted by implement-

ing motivational and engaging activities. In addition, these activities serve as a platform to incorporate real-life experiences into the course and promote an authentic learning process (Samson, 2015).

Table 5. Descriptive Analysis of Respondents' Level of Virtual Engagement (Cognitive) After their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Made a class presentation	2.73	0.71	High
2. Prepared two or more drafts of a paper or assignment before turning it in	2.83	0.69	High
3. Worked on a paper or project that required integrating ideas or information from previous sources	2.90	0.63	High
4. Put together ideas or concepts from different courses when completing assignments or during class discussion	3.02	0.64	High
5. Used an electronic medium to discuss or complete an assignment	3.10	0.59	High
6. Discussed ideas from readings or classes with faculty members outside of class	2.46	0.82	Low
7. Putting forth effort	3.06	0.70	High
8. Used e-mail to communicate with an instructor	2.58	0.77	High
9. Discussed grades or assignments with an instructor	2.44	0.74	High
10. Work harder than you thought you could do to meet an instructor's standards or expectations	3.13	0.57	High
11. Discussed ideas from your readings or classes with others outside of class	2.69	0.72	High
12. Going to the professor's virtual office during hours to review assignments or tests, or to ask questions	2.15	0.82	Low
13. Thinking about the course between class meetings	2.73	0.64	High
14. Finding ways to make the course interesting to me	3.19	0.67	High
15. Looking over class notes between classes to make sure I understand the materials	3.02	0.64	High
16. Applying course materials to my life	3.40	0.54	Very High
17. Finding ways to make the course relevant to my life	3.35	0.64	Very High
Grand Mean	2.87	0.68	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Table 6 emphasizes the level of emotional engagement of the students after the conduct of the buzz breaks intervention. Seven (7) indicators appeared with a verbal description of "High" and four (4) indicators emerged to be "Low" (items 4, 5, 10, and 11). The indicator "Having fun in class" garnered the highest mean score of 3.50 (*SD* = 0.55) among all the other indicators with a verbal description of

"High". This indicates that the implementation of the intervention promoted the interest and emotional engagement of the students. They still find learning and studying fun even though attending classes online may be a bit challenging at times. Further, it was also revealed in the study conducted by Prasetya et al. (2019) that learners can build interest and have fun while enjoying an interactive game, and while doing

so, they can learn different fundamentals and concepts of the topic assigned for a class.

Based on the results garnered, it revealed that it has a grand mean of 2.71 (*SD* = 0.68) with a “High” remark. The results of having indicators with “High” remarks indicate that the buzz break activities employed became a factor for students to be actively engaged with their classmates and had the opportunity to collaborate with other students in the pursuit of learning. This may be relevant to the reason that the design and nature of the buzz break activities are engaging and collaborative which gives the

students the chance to build new ideas and knowledge through the sharing of answers as they interact with each other. It has been proven in the study conducted by Hanum (2017) that classroom engagement and interaction among students and teachers increase the level of emotional and mental improvement of the learners and promote a healthy learning and teaching environment for them as well. In addition, Li and Yang (2021) emphasized that teacher-student positive interactions motivate the students to actively engage and participate in classroom activities and discussions.

Table 6. Descriptive Analysis of Respondents' Level of Virtual Engagement (Emotional) After their Exposure to Interactive Buzz Sessions as an Intervention

Indicators	M	SD	Verbal Description
1. Included diverse perspectives in class discussions or writing assignments	2.96	0.50	High
2. Worked with other students on projects during class	2.67	0.78	High
3. Worked with classmates to prepare class assignments	2.71	0.62	High
4. Tutored or taught other students paid or voluntary	2.04	0.77	Low
5. Participated in a community-based project as part of a regular course	2.42	0.68	Low
6. Had serious conversations with students who are very different from you in terms of their religious, political opinions, or personal values	2.56	0.77	High
7. Really desiring to learn the materials	3.21	0.46	High
8. Being confident that I can learn and do well in the class	3.13	0.70	High
9. Having fun in class	3.50	0.55	High
10. Worked with faculty on activities other than coursework	2.31	0.80	Low
11. Talked about career plans with a faculty member or adviser	2.29	0.85	Low
Grand Mean	2.71	0.68	High

Statistical Ranges:

3.26 - 4.00 (Very High), 2.51- 3.25 (High), 1.76 - 2.50 (Low), 1.00 - 1.75 (Very Low)

Comparative Results Before and After the Intervention

Figure 2 illustrates the comparison of the analysis of students on level of behavioral engagement before and after the intervention. It can be seen that from the description “Slightly Engaged” (*n* = 8 to *n* = 6) and “Engaged” (*n* = 35 to *n* = 34), the number of students decreased which is a good indication that their level of behavioral engagement has increased. As

manifested, three (3) students became “Highly Engaged” (*n* = 5 to *n* = 8) after the conduct of the intervention. The results signify that the IBS strategy heightened the engagement of students in terms of their behavior towards the activities. It is proven that when students view instructions as challenging and when they are involved with collaborative activities, behavioral engagement becomes higher (Shernoff & Csikszentmihalyi, 2009, cited in Fredricks,

2013). Also, Fredricks (2011), as cited in Fredricks (2013), recommended that for the teachers to increase students' behavioral en-

gagement, they should incorporate various activities in the lesson that consist of real-life situations and can catch students' attention.

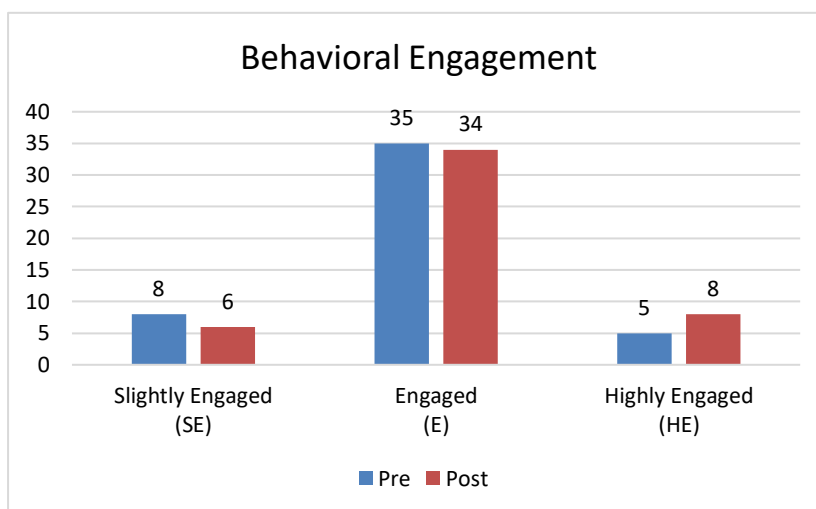


Figure 2. Visual Presentation of Students' Level of Behavioral Engagement during Pre-Assessment and Post-Assessment

Figure 3 illustrates the comparison of the students' cognitive engagement before and after the conduct of the IBS strategy. The assessment of students' cognitive engagement was divided into three (3) levels, namely: "Slightly Engaged", "Engaged", and "Highly Engaged". After the conduct of the intervention, seven (7) students were slightly engaged from the eight (8) students before the implementation of the IBS strategy. Similar to this, 36 engaged students were recorded after undergoing the intervention from the 37 engaged students before the implementation. On the other hand, the highly

engaged students increased in numbers from three (3) students to five (5) students after participating in the IBS strategy.

The results signify that the IBS strategy helped the students to be active and engaged in terms of cognitive aspects. Similarly, Chi and Wylie (2014) stated that implementing active activities, such as the IBS strategy, makes the students cognitively engaged. This is because these activities activate the students' prior knowledge of the lesson which can be applied in a new context (Chi & Wylie, 2014).

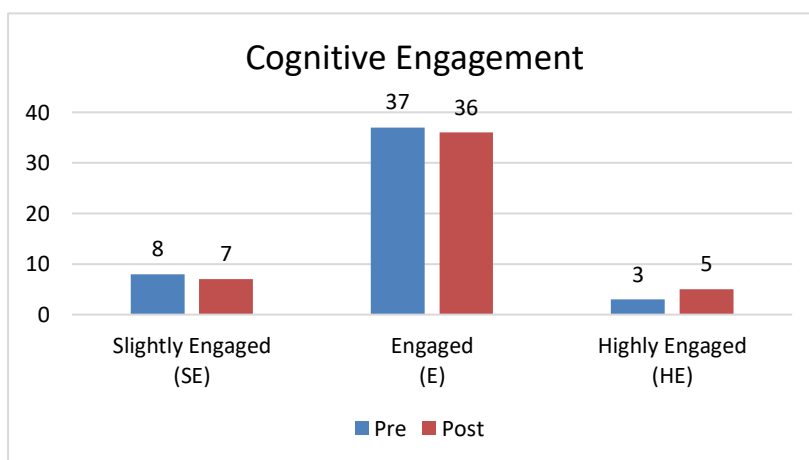


Figure 3. Visual Presentation of Students' Level of Cognitive Engagement during Pre-Assessment and Post-Assessment

Figure 4 presents the level of emotional engagement before and after the conduct of the intervention. Before the conduct of the study, 14 students were said to be "Slightly engaged" and the number of students became 13. Consequently, thirty-two students were considered to be "engaged" after the conduct of the study, as compared to thirty students before the

conduct of the intervention. Meanwhile, four (4) students were recorded as "Highly Engaged" before the conduct of the intervention, and three (3) students were considered "highly engaged" after. This further implies that IBS contributed to the emotional engagement of the students which made them active and participative in the class.

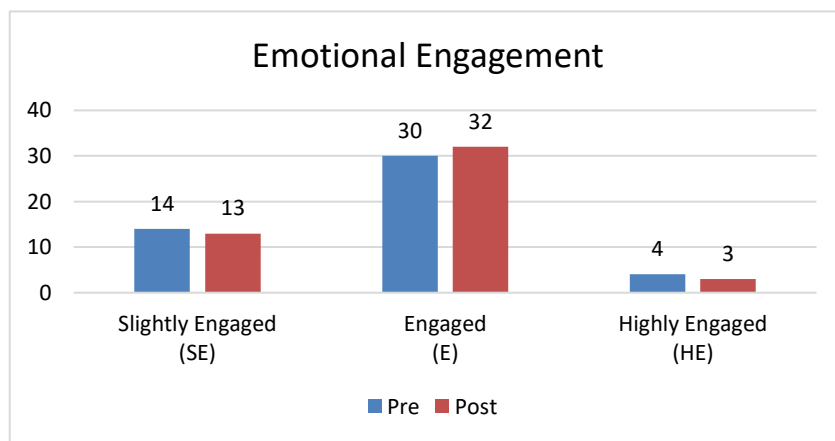


Figure 4. Visual Presentation of Students' Level of Emotional Engagement during Pre-Assessment and Post-Assessment

Figure 5 discloses the overall virtual engagement of the students during pre- and post-assessment. It can be seen that results show no discrepancy between the before (pre) and after (post) the IBS intervention. Among the 48 students, seven (7), thirty-nine, and two (2) of them assessed themselves as slightly engaged, engaged, and highly engaged respectively during pre- and post-assessment of the strategy. This proves that students' virtual engagement

has been sustained through utilizing the "Wordwall" in administering the five (5) interactive buzz break activities. Aided by the study of Thiry & Hug (2021), they affirmed that students and faculty should innovate different approaches to sustain students' virtual engagement during a difficult semester. Additionally, this is to increase professional teaching methods and transfer collaborative work or active learning virtual environments.

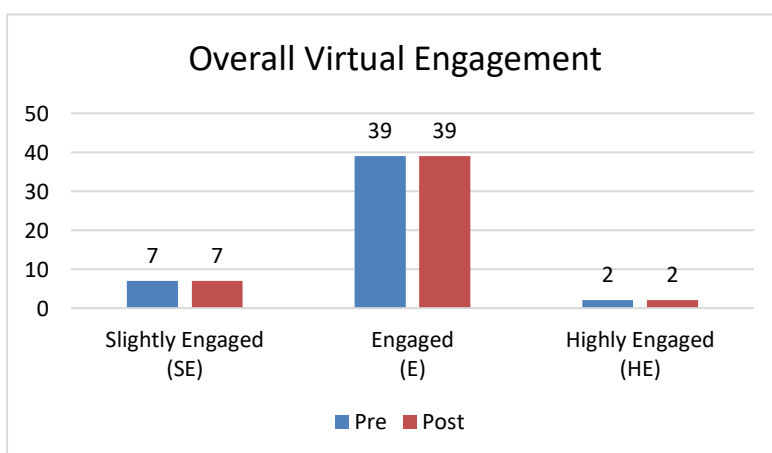


Figure 5. Visual Presentation of Students' Overall Virtual Engagement during Pre-Assessment and Post-Assessment

Remarkable Experiences during the Interactive Buzz Sessions

Driving Forces of Students' Active Engagement

After the implementation of the intervention strategy, a reflective journal was asked of the participants who underwent the buzz break activities. Based on their reflections, students indicated the driving forces that made them more engaged in the virtual class through the implemented activities.

Positive Virtual School Climate. The relationship established between the students and teachers became a springboard for more engaged students. The engagement seen in the students was due to the relationship formed between their teachers. The sympathy and compassion given by the teachers affected the students which eradicated the feeling of nervousness, anxiety, and stress during the course. Since the activities promote interactions, it helps the students to have a great experience despite the virtual setup of learning by having their teachers along the way to give the guidance that they need. The consideration that was given by the teachers also paved the path for the improvements of the students which made the students comfortable in learning. It also served as a bridge for the students to form social relationships with their classmates considering that they have not seen each other due to the distance learning modality brought by the pandemic.

"...we can engage it with our classmates, teacher's interns and also in our course. By doing these different kinds of activities I can talk to my classmates with whom I haven't been very close yet...It engages not only with my classmates but also with the intern students." (S12)

"I observed that compared to before, I have a lot of friends now because this activity has different groupings every session which is why my friends keep on increasing." (S21)

This indicates that the buzz break activities not only sustain student engagement but also promote a positive school climate that serves as one of the driving forces of the students to participate in the activities. A positive school climate eliminates the hesitation of the student to share their ideas in class. The findings support the report of Konold et al. (2016) which

stated that high student engagement is connected to a positive school climate.

Worthwhile Experiences. The perception of the students in the implementation of the IBS strategy also plays an important role in their virtual engagement. Ensuring that students are enjoying the activities builds their motivation to participate. The students also found the activities exciting because they are also gaining knowledge from their classmates aside from the discussion with the teachers in the course. With that, peer learning was also manifested since the students were listening to their classmates' own experiences which may further help in understanding the course content. Moreover, since the students who underwent the IBS strategy belong to the Bachelor of Physical Education program, their sense of competitiveness contributed to their engagement. The rush of adrenaline into their system forces their minds to think quickly in answering the questions about the buzz break activities. These experiences took part in their virtual engagement which was stated in their reflections:

"The activities that we had in Buzz Break sessions were really enjoyable... this made me feel excited even more to participate well." (S7)

"...we're having fun in this game, we need also to be focused to fight for the points or score that we need to fight off to ourselves or in our group." (S16)

Ensuring the fruitful experiences that the students will have in every activity is a stepping stone to involving them in the class. In addition, the teacher must prevent the build-up of anxiety and stress among the students every time the class kicks in to maximize their participation. Preferably, the feeling of enjoyment and excitement must be promoted to sustain high engagement among the students. These reflections were a manifestation of the importance of providing worthwhile experiences that could lead to positive emotions in the students to sustain their virtual engagement. Pekrun and Linnenbrink-Garcia (2012) mentioned that emotions play a significant role in student engagement and that teachers must establish an emotionally adaptive learning environment.

Skills Development. Aside from sustaining the students' virtual engagement, skills were also developed based on their reflections. In

particular, one of the 21st-century skills needed by the learners was recorded in reflections, namely, critical thinking skills. Based on the reflections, the activities are not simple questions that involve remembering skills, instead, the activities are designed to improve the higher-order thinking skills of the students. This will help them to further understand the lesson. Since the content of the buzz break activities was based on a real-life situation, the students learned how to analyze the lessons and apply them to their own experiences. Moreover, the activities motivated the students to participate in the class since they can relate to the questions being asked which activated their virtual engagement.

"...it can develop your critical thinking because you are answering a question that you need to apply in a real scenario." (S9)

"It also encourages me to analyze and think critically. Through the Buzz Break Activity, I understand our topic deeply." (S26)

"It trains our mind to analyze and understand each question for us to be able to answer correctly." (S28)

Implementing the IBS strategy took part in the skill development of the students. This indicates that providing a variety of engaging activities may play an important role in enhancing the capabilities of the students. The findings are in conjunction with the claim of Gleason et al. (2011) who stated that incorporating active learning in the curriculum, such as the IBS strategy, benefits the students due to its cultivation of more thorough learning that promotes knowledge application and skill development.

Contributions to Students' Learning

Improvement of Understanding. The implementation of the IBS proved that there is a rapid increase in the understanding of the students. Given that the implementation of IBS gives enjoyment to the students, the goal is also for the students to participate and to learn more from the lesson. It can be seen that their understanding increases after utilizing the IBS. Students tend to listen and review the lesson more because of the activities being implemented in the session. Students are more focused and understand the lesson more for them

to answer the questions that are given during the implementation. With that, it can be considered that students improved their understanding of the topic being discussed with the help of the IBS implementation. Astuti et al. (2020), concluded that implementing activities before and in-between activities increases students' motivation and understanding of the lesson.

"Buzz Break Sessions are quite beneficial, particularly to us, the students. When it comes to the questions that must be answered, this broadens our perspective..." (S14)

"The buzz breaks encourage me to think critically, and it also helped to increase my participation in our class..." (S19)

"The buzz break activities help me to understand the lesson deeply. It makes the lesson fun and exciting. Through buzz break, I learned how to brainstorm and explore the things that I do not know..." (S26)

Collaborative Work. Implementing IBS in the class improves the engagement of the students in the discussion with their peers and the teacher. Aside from it, IBS develops collaborative work and cooperation of the students in the groups because some of the IBS need to communicate with the students in their group to answer several questions. Also, it can improve their relationship with each other and bring competitiveness to win or gain points in answering or participating in the IBS. According to the study of Backer et al. (2018), group work has a useful effect on the engagement and learning of the students. Students have confidence in their skills to understand, explore and investigate with their group mates. Collaboration is important for the students, as a result, they enjoy the social, cognitive, and emotional side of working as a group or team.

"This activity unites us. We were able to share our knowledge and learning with the help of this activity..." (S21)

"I was able to engage with my classmates and teachers because of the activities..." (S29)

"Yes, I was able to engage with my classmates and teachers. We share our thoughts on every topic if what was the other knowledge that we know about that topic..." (S44)

Building Self-Improvement. The implementation of the IBS proved to build self-improvement in various ways as viewed by the

students. Since IBS activities are based on the lessons provided by the class facilitators, the students are inspired to revisit previous discussions of the topics which also became a way for the students to review for their upcoming quizzes, assessments, or exams. The IBS has become a way for them to capture positive study habits and improve themselves in a way where they are confident to participate actively in class discussions and share their insights, opinions, and thoughts about a certain matter. It has been revealed in the study conducted by Argan et al. (2008) that creating and employing different interactive activities within a class is effective and contributory to the improvement of the students holistically, most especially in their academic performance.

"Buzz Break taught me how to review my notes..." (S10)

"Buzz breaks serve as a review and at the same time I get to use them to realize something..." (S12)

"We may utilize it as a reviewer before taking the quiz or exam since we can recall the questions here..." (S15)

"Buzz Break activities really made a big role to gain my confidence on participating in class. It pushes me to do things that I did not practice before, like reviewing the materials, taking

notes, and sometimes sharing my thoughts to my friends..." (S20)

Student Management and Strategy. Implementation of an engaging intervention such as the IBS improved student management and strategy as it provided the facilitators with a technique that improves the teaching and learning set up of both students and teachers. This proves that IBS implementation does not only benefit the students but contributes as well to the teachers. It helped in making the students feel "fun while learning" and "not being bored" when having class discussions as per the words of the students in their responses. This may also imply that IBS has been potentially an instrument for improving classroom and student management and strategy in terms of keeping the students interested, active, and engaged throughout the class discussions.

"The buzz break activities help me to understand the lesson deeply. It makes the lesson fun and exciting..." (S26)

"The buzz break activity is a great way for us to not only have fun but also learn and become more aware of the lesson we are studying." (S30)

"It contributes to my learning through key words and enjoying while learning..." (S33).

Data Triangulation

Table 9. Matrix of the Integrated Results and Findings

Level of Virtual Engagement	Students' Reflective Journals	Teachers' Observations
High Behavioral Engagement	<p>"The engagement between the teacher and student is there because they are guiding us through all the instructions and correcting us if we say things that are not correct." (S2)</p> <p>"It pushes me to do things that I did not practice before like reviewing the materials, taking notes, and sometimes sharing my thoughts with my friends." (S21)</p>	Students became more responsive and participative in the discussions. They already know when to initiate. Students were able to learn what and how to act and react with the instructions given by the teacher.
High Cognitive Engagement	"Everyone is involved in problem-solving by suggesting solutions to a situation given...sharing their thoughts and considering every preference of the member to arrive at a unified solution. These are important training for learners to be prepared for real-	Learners' cognitive skills have been improved. From having limited ideas, students were able to efficiently acquire knowledge, knew how to manipulate

life situations once the problem is encountered and a solution to a problem is needed.” (S1) information, and became more distinguished at reasoning.

“Buzz breaks contribute to my learning through working and trying hard to be my best. It helps me to learn, communicate with my classmates, and work with them. I learned different creative ideas in games and activities. It helps me know how to apply lessons in my life. It also allows me to share my knowledge. I am able to use my learning in the future through using my knowledge in teaching. I can use creative ideas in games and activities so that my future students will be able to have fun and enjoy learning.” (S24)

High Emotional Engagement

“The Buzz Break Activity is fun, it is not boring, and we can learn even small things from our classmates. And I think that this will be more fun if this was presented face-to-face. I know that the student will get more excited and will engage actively in the class.” (S10)

Students have been comfortable with their environment even virtually because of the fun and enjoyment they have experienced through the Buzz Break Activities. It can be seen on their faces the paint of excitement and happiness when they interact with the games and their classmates.

“I find the Buzz Break Sessions enjoyable and helpful. I feel nervous when the activities are starting but it still gives a lot of fun. Yes, I was able to engage with my classmates, teachers, and the course, because the activities are very interactive things to do.” (S25)

Conclusion

This study aimed to sustain the level of virtual engagement of pre-service Physical Education teachers under the Health Education course through the conduct of interactive buzz breaks in their online synchronous sessions. Relative to the results and findings, the following reflections were concluded:

1. There is a high level of behavioral, cognitive, and emotional virtual engagement before the strategy. Since distance education has been in its second year, students have already adapted to the environment of a virtual classroom. This brought them to a high level of virtual engagement. However, there are still some factors that they are not fully engaged in since the study focused on a particular Health Education course that was taken by the students for the first time in the current academic year. Hence, the

Buzz Break Activities served as a strategy to engage them more in their Health Education course.

2. There is a high level of behavioral, cognitive, and emotional virtual engagement after the strategy. The implemented Buzz Break Activities heightened the virtual engagement of students. The utilization of “*Wordwall*”, a website that can be used as a teaching resource, served as an asset to captivate students’ interest and attention to easily and actively involve them in the teaching and learning process. Through this intervention, students’ virtual engagement was maximized.
3. There is an increase in virtual engagement but not full improvement when comparing the pre-assessment and post-assessment of the intervention. Considering that students’ level of virtual engagement is already high,

it is relative to say that the IBS strategy promoted virtual engagement as it encouraged students to maximize their learning experiences.

4. On top of the existing positive benefits of the IBS strategy, there are still challenges that students can acquire in sustaining their virtual engagement.
5. Considering that there is limited time for the intervention program to be implemented, there is a need for prolonged exposure of students to varied virtual collaborative activities using multiple platforms. These must also be complemented with asynchronous-based activities and forums to further sustain a significant increase in their engagement in class.

Based on the results and findings of the study, recommendations are given to serve as a benchmark for future research undertakings. First, selecting students who are significantly low in virtual engagement is recommended to test further the effectiveness of the IBS strategy. Moreover, additional activities may be added to the strategy to prolong the students' exposure to the implementation of the intervention. Extended exposure to the intervention may significantly improve the virtual engagement of students. Since the study used the platform "Wordwall", future researchers may also utilize various educational platforms to engage the students in the class. In addition, asynchronous activities such as collaborative discussion forums may be added to the implementation of the intervention to not limit the engagement of the students in synchronous classes. Further, in implementing the IBS strategy, it is recommended to introduce the activities before the administration to lessen the anxiety of the students. This could also help the students to prepare better which could lead to a more engaged class. Also, introducing the activities earlier will provide the teachers and students with the expectations that they need to achieve in a particular session.

As the current education setup is facing a problem nowadays regarding the active participation of the students in an online learning environment, conducting and implementing activities that promote active engagement with the students, such as the IBS is indeed vital for

the holistic development of the students and to the teaching and learning process. The conduct of the Interactive Buzz Break Sessions appeared to be contributory to the enhancement of student participation and active engagement during online classroom discussions during synchronous sessions. Previous research has proven that interactive activities introduced to the students during classes contribute magnanimously to the learning process and development of the students. Hence, the conduct of this IBS added to the body of knowledge in the sense that it introduced potential techniques and strategies for teachers to make their students engaged, active, and participative in class despite the set-up in an online learning environment where students are experiencing an extra-challenge in focusing to the class discussions.

Acknowledgment

The authors would like to extend their sincerest gratitude to the Don Honorio Ventura State University, Bacolor, Pampanga, for the support extended in this study.

References

- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the student engagement instrument. *Journal of School Psychology, 44*(5), 427-445.
<https://doi.org/10.1016/j.jsp.2006.04.002>.
- Argan, M., Wehmeye, M. L., Cavin, M., & Palmer, S. (2008). Promoting student active classroom participation skills through instruction to promote self-regulated learning and self-determination. *Career Development for Exceptional Individuals, 31*(2), 106-114.
<https://doi.org/10.1177/0885728808317656>.
- Armstrong-Mensah, E., Ramsey-White, K., Yankey, B., & Self-Brown, S. (2020). COVID-19 and distance learning: Effects on Georgia State University school of public health students. *Frontiers in Public Health, 8*, 547.
<https://doi.org/10.3389/fpubh.2020.576227>.
- Astuti, A. R., Solihat, A., & Satriani, I. (2020). The influence of ice breaker to students' motivation in teaching English. *PROJECT (Professional Journal of English Education), 3*(2), 210.
<https://doi.org/10.22460/project.v3i2.p210-216>.

- Backer, J. M., Miller, J. L., & Timmer, S. M. (2018). The effects of collaborative grouping on student engagement in middle school students. *St. Catherine University*. <https://sophia.stkate.edu/maed/280/>.
- Baloran, E. T., & Hernan, J. T. (2021). Course satisfaction and student engagement in online learning amid COVID-19 pandemic: A structural equation model. *Turkish Online Journal of Distance Education*, 22(4), 1-12. <https://doi.org/10.17718/tojde.100272>.
- Banna, J., Lin, M. F. G., Stewart, M., & Fialkowski, M. K. (2015). Interaction matters: Strategies to promote engaged learning in an online introductory nutrition course. *Journal of Online Learning and Teaching*, 11(2), 249. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4948751/>.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>.
- Bueno, M., Perez, F., Valerio, R., & Areola, E. M. Q. (2022). A usability study on Google Site and Wordwall .Net: Online instructional tools for learning basic integration amid pandemic. *Journal of Global Business and Social Entrepreneurship (GBSE)*, 7(23). [http://www.gbse.com.my/V8%20NO.23%20\(JANUARY%202022\)/Paper-288-.pdf](http://www.gbse.com.my/V8%20NO.23%20(JANUARY%202022)/Paper-288-.pdf).
- Cale, L., Harris, J., & Hooper, O. (2020). Debating health knowledge and health pedagogies in physical education. *Debates in Physical Education*, 2, 256-277. <https://doi.org/10.4324/9780429504365-16>.
- Çil, E. (2021). The effect of using Wordwall. net in increasing vocabulary knowledge of 5th Grade EFL students. *Language Education and Technology*, 1(1), 21-28. <http://www.langedutech.com/letjournal/index.php/let/article/view/16>.
- Chi, M. T., & Wylie, R. (2014). The ICAP framework: Linking cognitive engagement to active learning outcomes. *Educational Psychologist*, 49(4), 219-243. <https://doi.org/10.1111/cogs.12626>.
- Christopoulos, A., Conrad, M. & Shukla, M. (2018). Increasing student engagement through virtual interactions: How?. *Virtual Reality*, 22, 353-369. <https://doi.org/10.1007/s10055-017-0330-3>.
- Cole, A. W., Lennon, L., & Weber, N. L. (2021). Student perception of online active learning practices and online learning climate predict online course engagement. *Interactive Learning Environments*. 29 (5), 866-880. <https://doi.org/10.1080/10494820.2019.1619593>.
- Delfino, A. P. (2019). Student engagement and academic performance of students of Partido State University. *Asian Journal of University Education*, 15(3), 42-55. <https://doi.org/10.24191/ajue.v15i3.05>.
- Deming, W. E. (1993). *The New Economics*. MIT Press. Cambridge, MA.135.
- Department of Education (DepEd). (2016). K to 12 Health Curriculum Guide. https://www.academia.edu/36027407/K_to_12_Curriculum_Guide_HEALTH
- Department of Education (DepEd). (2016). K to 12 Physical Education Curriculum Guide. <https://www.deped.gov.ph/wp-content/uploads/2019/01/PE-CG.pdf>.
- Elshami, W., Taha, M, H., Abdalla, M.E., Abuzaid, M., Saravanan, C., & Kawas, S.A. (2022). Factors that affect student engagement in online learning in health professions education. *Nurse Education Today* 110. <https://doi.org/10.1016/j.nedt.2021.105261>
- Fredricks, J., McColskey, W., Meli, J., Mordica, J., Montrosse, B., & Mooney, K. (2011). Measuring student engagement in upper elementary through high school: A description of 21 instruments. issues & answers. REL 2011-No. 098. *Regional Educational Laboratory Southeast*. <https://files.eric.ed.gov/fulltext/ED514996.pdf>.
- Fredricks, J. (2013). Behavioral engagement in learning. *International guide to student achievement*, 42-44.
- Gleason, B. L., Peeters, M. J., Resman-Targoff, B. H., Karr, S., McBane, S., Kelley, K., Thomas, T., & Denetclaw, T. H. (2011). An active-learning strategies primer for achieving ability-based educational outcomes. *American journal of pharmaceutical education*, 75(9). <https://doi.org/10.5688/ajpe759186>.
- Halif, M.M., Hassan, N., Sumardi, N.A., Omar, S.A., Ali, S., Aziz, R. A., Majid, A. A., & Salleh, N. F. (2020). Moderating effects of student motivation on the relationship between learning style and student engagement. *Asian Journal of University Education (AJUE)*, 16. <https://doi.org/10.24191/ajue.v16i2.10301>.
- Hanum, N. S. (2017). The importance of classroom interaction in the teaching of reading in junior high school. *Graduate School Conferences, Universitas Negeri Malang*.
- Hewson, E. R. (2018). Students' emotional engagement, motivation and behaviour over the life of an online

- course: Reflections on two market research case studies. *Journal of Interactive Media in Education*, 1(10). <https://doi.org/10.5334/jime.472>.
- Huang, B., Hew, K. F. & Lo, C. K. (2019). Investigating the effects of gamification-enhanced flipped learning on undergraduate students' behavioral and cognitive engagement. *Interactive Learning Environments*, 27(8), 1106-1126. <https://doi.org/10.1080/10494820.2018.1495653>
- Jamaludin, R., & Osman, S. Z. M. (2014). The use of a flipped classroom to enhance engagement and promote active learning. *Journal of Education and Practice*, 5(2), 124-131. <https://www.iiste.org/Journals/index.php/JEP/article/view/10648>.
- Khan, N. (2017). Problems in creating conducive classroom environment in teacher training institutes. *NICE Research Journal*, 52-62. <https://doi.org/10.51239/nrjss.v0i0.53>.
- Khlaif, Z. N., Salha, S., & Kouraichi, B. (2021). Emergency remote learning during COVID-19 crisis: Students' engagement. *Education and information technologies*, 26(6), 7033-7055. <https://doi.org/10.1007/s10639-021-10566-4>.
- Khanova, J., McLaughlin, J. E., Roney, D. H., Roth, T. M., & Harris, S. (2015). Instructional design and assessment student perceptions of a flipped pharmacotherapy course. *American Journal of Pharmaceutical Education*, 79(9), 140. <https://doi.org/10.5688/ajpe799140>.
- Kirby, L. A. J., Kornman IV, P. T., & Robinson, J. L. (2020). Outcomes of "brain breaks": Short consistent meditation and silent sessions in the college classroom are associated with subtle benefits. *Journal of Cognitive Enhancement*, 5(1), 99-177. <https://doi.org/10.1007/s41465-020-00178-0>.
- Konold, T., Cornell, D., Shukla, K., & Huang, F. (2017). Racial/ethnic differences in perceptions of school climate and its association with student engagement and peer aggression. *Journal of youth and adolescence*, 46(6), 1289-1303. <https://doi.org/10.1007/s10964-016-0576-1>.
- Data Privacy Act of 2012, N. P. C. §§ 8-11 (2012). <https://www.privacy.gov.ph/data-privacy-act/#1>.
- Larasanti, S., & Marlina, L. (2019). Using buzz group technique in teaching writing analytical exposition text for EFL students at senior high schools. *Journal of English Language Teaching*, 8(1), 13-21. <https://doi.org/10.24036/jelt.v8i1.103322>.
- Li, L., & Yang, S. (2021). Exploring the influence of teacher-student interaction on university students' self-efficacy in the flipped classroom. *Journal of Education and Learning*, 10(2), 84-90. <https://doi.org/10.5539/jel.v10n2p84>.
- Lawson, M. J., Vosniadou, S., Van Deur, P., Wyra, M., & Jeffries, D. (2018). Teachers' and students' belief systems about the self-regulation of learning. *Educational Psychology Review*, 31(1), 223-251. <https://doi:10.1007/s10648-018-9453-7>.
- Monteiro, V., Carvalho, C. & Santos, N.N. (2021) Creating a supportive classroom environment through effective feedback: Effects on students' school identification and behavioral engagement. *Frontiers in Education*, 6, 661736. <https://doi.org/10.3389/educ.2021.661736>.
- National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). The Belmont report: Ethical principles and guidelines for the protection of human subjects of research. U.S. Department of Health and Human Services. https://www.hhs.gov/ohrp/sites/default/files/th-e-belmont-report-508c_FINAL.pdf.
- Nguyen, T.D., Cannata, M., & Miller, J. (2016). Understanding student behavioral engagement: Importance of student interaction with peers and teachers. *The Journal of Educational Research*, 11(2), 163-174. <https://doi.org/10.1080/00220671.2016.1220359>.
- Özhan, Ş. Ç., & Kocadere, S. A. (2019). The effects of flow, emotional engagement, and motivation on success in a gamified online learning environment. *Journal of Educational Computing Research*, 57(8), 2006-2031. <https://doi.org/10.1177/0735633118823159>.
- Pekrun, R., & Linnenbrink-Garcia, L. (2012). Academic emotions and student engagement. In *Handbook of research on student engagement*, 259-282. Springer, Boston, MA. https://doi.org/10.1007/978-1-4614-2018-7_12.
- Philippine Health Research Ethics Board. (2018). National Ethical Guidelines for Health and Health-Related Research. <https://ethics.healthresearch.ph/index.php/phoca-downloads/category/4-neg>.
- Prasetya, W., Leek, C., Melkonian, O., ten Tusscher, J., van Bergen, J., Everink, J., van der Kils, T., Meijerink, R., Oosenbrug, R., Oostveen, J., van den Pol, T., & van Zon, W. (2019). Having fun in learning formal

- specifications. In *2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering Education and Training (ICSE-SEET)*, 192-196. IEEE. <https://doi.org/10.1109/icse-seet.2019.00028>.
- Raes, A., Vanneste, P., Pieters, M., Windey, I., Noortgate, W.V. D., & Depaede, F. (2020). Learning and instruction in the hybrid virtual classroom: An investigation of students' engagement and the effect of quizzes. *Computers & Education*, *143*, 103682. <https://doi.org/10.1016/j.compedu.2019.103682>.
- Raju, D.T., Murthy, G. R. K., Khade, S. B., Padjama, B., Yashavanth, B. S., Kumar., A. S., Soam, S. S., & Srinivasarao, Ch. (2021). Understanding learning behaviour in online courses through learning analytics. *Asian Journal of Agricultural Extension, Economics and Sociology*, *39*(10), 381-390. <https://doi.org/10.9734/ajaees/2021/v39i1030705>.
- Redmond, P., Abawi, L. A., Brown, A., Henderson, R., & Heffernan, A. (2018). An online engagement framework for higher education. *Online learning*, *22*(1), 183-204. <https://doi.org/10.24059/olj.v22i1.1175>.
- Rugube, T., Mthethwa-Kunene, K. E., & Maphosa, C. (2020). Promoting interactivity in online learning—Towards the achievement of high-quality online learning outcomes. *European Journal of Open Education and E-learning Studies*, *5*(2). <https://doi.org/10.46827/ejoe.v5i2.3381>.
- Samson, P. L. (2015). Fostering student engagement: Creative problem-solving in small group facilitations. *Collected Essays on Learning and Teaching*, *8*, 153-164. <https://doi.org/10.22329/celt.v8i0.422>.
- Sherab, K. (2013). Strategies for encouraging behavioural and cognitive engagement of pre-service student-teachers in Bhutan: An action research case study. *Educational Action Research*, *21*(2), 164-184. <https://doi.org/10.1080/09650792.2013.789710>.
- Snijders, I., Wijnia, L., Rikers, R. M., & Loyens, S. M. (2020). Building bridges in higher education: Student-faculty relationship quality, student engagement, and student loyalty. *International Journal of Educational Research*, *100*, 101538. <https://doi.org/10.1016/j.ijer.2020.101538>.
- Sökmen, Y. (2021): The role of self-efficacy in the relationship between the learning environment and student engagement. *Educational Studies*, *47*(1), 19-37. <https://doi.org/10.1080/03055698.2019.1665986>.
- Thiry, H. & Hug, S. H. (2021). Sustaining student engagement and equity in computing departments during the COVID-19 pandemic. In *Proceedings of the 52nd ACM Technical Symposium on Computer Science*. <https://doi.org/10.1145/3408877.3432381>.
- Xu, Y., Jin, Li., Deifell, E., & Angus, K. (2022). Facilitating technology-based character learning in emergency remote teaching. *Foreign Language Annals*, *55*(1), 72-97. <https://doi.org/10.1111/flan.12541>.
- Yu, Z., Gao, M., & Wang, L. (2021). The effect of educational games on learning outcomes, student motivation, engagement and satisfaction. *Journal of Educational Computing Research*, *59*(3), 522- 546. <https://doi.org/10.1177/0735633120969214>.
- Zaborova, E. N., Glazkova, I. G., & Markova, T. L. (2017). Distance learning: Students' perspective. *Sociological Studies*, *2*(2), 131-139. <http://socis.isras.ru/en/article/6566>.